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ABSTRACT

Six articles on issues in vocational education are presented in this booklet. The first article, "A Need for Articulation in Vocational Education," by Joseph Senak, discusses different approaches to the problem of articulation. Ruth Volz, in "Vocational Education for Our Ageless Society," examines the need for developing programs and training to meet the unique needs of older Americans. The third article, by Betty Smith, is entitled "The Meaning of Work: Past, Present, and Future with Implications for Education." Next, "The Vocational Teacher Educator - An Endangered Species?", by Vickie Johnson Brown, examines the need for appropriate measures to be taken to assure the credibility and reliability of the teacher educators in meeting vocational needs in America. The fifth article, "Human Relations Versus Productivity--A Vocational Education Issue," by Ruth Richardson, discusses the relationship between human relations, competence, and productivity. The last essay, "Benefit/Cost Analysis," by Virginia Hatch, discusses this approach as a part of the decision-making element of educational planning. (JH)

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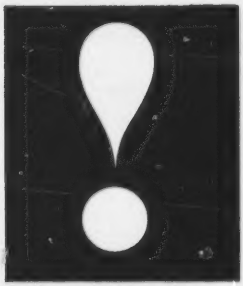

IMPERATIVES IN VOCATIONAL EDUCATION

Department of Vocational-Technical Education
College of Education
The University of Tennessee, Knoxville

CE 022 628

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Foreword

Imperatives In Vocational Education was initiated as funding for the EPDA 552 Vocational Education Leadership Development Programs across the country was ending. As a refereed publication, it demonstrates a measure of the quality of EPDA 552 awardees and graduate students in vocational-technical education at The University of Tennessee, Knoxville.

The authors are representative of the future leaders who by the passage of the EPDA 552 legislation have been encouraged to complete graduate programs. With leadership of the quality represented by the authors of these articles, the future of vocational education appears to be in capable hands.

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A Need for Articulation in Vocational Education

By Joseph K. Semak*

INTRODUCTION

Articulation is an emotional as well as an educational issue which concerns both students and educators at all levels of education in a variety of institutional settings. Currently, it is attracting public concern. In its most basic terms, articulation is the interrelation of an instructional program with the educational programs of other available institutions or with work opportunities. There is a multitude of institutions, such as elementary, middle, secondary schools, colleges and universities as well as others, both public and private. This collection of institutions does not represent a system of education. They were developed to serve specific purposes. Their diversity was a source of strength and identity. Now, however, they provide a chaotic maze which prevents a smooth transition from one to another. Articulation between and among these institutions becomes increasingly important to have an education system which serves the students and society.

BACKGROUND

Public high schools were developed as a common school system consisting of elementary and secondary education that was articulated to facilitate a continuous learning progress. In the latter part of the nineteenth century, high school curricula were articulated with college requirements. The Commission on the Reorganization of Secondary Education in 1918 made recommendations for curricular change. The only requirements that remained unchanged were college entrance requirements.

Secondary education is now passing through a transition stage as a result of twentieth century societal changes. In the 1950s, there was a change in curricula which emphasized math, science, and technology.

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The nineteenth century industrial revolution hastened the movement for universal elementary education to produce literate workers. In similar fashion, the twentieth century technological and scientific revolution has required more education because of additional occupation requirements. Original school concepts included articulation by design in the primary to secondary to college flow. The articulation problem is complex today due to advancements in technology interwoven with societal demands for more education.

ARTICULATION IN VOCATIONAL EDUCATION

In vocational education, we have continuously concerned ourselves with articulation of our educational effort with work opportunities rather than other educational opportunities. We all are aware of current efforts in evaluation and follow-up in order to improve our efforts and document our performance in job placement.

Estimates are that there will be three million secondary school graduates per year through 1981. In 1973 more than 53 percent of secondary school graduates did not enter post-secondary education on a full or part-time basis, and this group has the highest unemployment (Canup, 1976). Eventually there will be additional students graduating from vocational schools, technical institutes, and community colleges who will look for advancement through education.

The public as well as some groups of students are looking toward higher education to meet their needs. Pressure is increasing for meaningful education directed toward employment and advancement, especially in the technical areas; and, highly specialized vocational components in lower levels of curriculum will be designed.

Romine (1975) lists several areas for concern in higher education. Some of these concerns are the growing heterogeneity and mobility of students engaged in higher education, the growing community college movement, and the great numbers of students attending two or more collegiate institutions in completing a baccalaureate degree. The challenge of curricular articulation is present in all of these concerns.

Educational leadership and funding agency personnel are concerned with fragmentation of learning opportunities which results in overlapping curriculum and duplication of effort (Martin, 1973). Canup (1976) suggests improved articulation agreements between secondary and post-secondary institutions as a way to establish a true continuum of education which addresses the problems of unemployed youth.

Improved articulation requires restructuring curriculum to provide articulation among different schools, making each educational level accessible to the earlier level, and providing for former students who have interrupted their education.

PROGRAM ARTICULATION

Program articulation is the degree of continuity, consistency, and interdependence in the offerings of the successive grades and divisions of the school system. It may be vertical as from secondary to post-secondary, or horizontal, between similar programs at the same level. The former is referred to as career ladder; the latter as core or core curriculum. A combination of the two is referred to as career lattice.

Most attention has been directed to vertical articulation which represents increased achievement or the possibility of achievement and upward mobility. Both specialization and stratification trends within disciplines have resulted in this increased emphasis on educational sequencing (Ball, 1973). Other attention should be directed at problems of transferability and entrance requirements needed, such as transfer from vocational high schools to community colleges and from technical institutes to four year colleges.

For example, acceptance of technical institute programs for transfer means substantial changes in requirements for most baccalaureate degree programs. Technical programs, unlike standard transfer programs which were designed to articulate with the baccalaureate programs, do not contain a sufficient general education component (Boatman, 1973). Technical institution programs at different educational levels may differ in technical education subject matter and depth which may produce varying amounts of content overlap.

Vertical articulation from post-secondary, two-year institutions is most easily addressed by designing upper division level programs based on existing lower division technical programs. (Forman, 1973). This approach was found in North Carolina in a few institutions which offered a Bachelor of Technology degree and a modified Bachelor of Science degree which was targeted for a specific group (Boatman, 1973). Kintzer (1976) found that such an approach was gradually spreading on an interinstitutional basis and was found where the programs were built on initial instruction provided by community colleges and technical institutes. One concern is that if this approach reaches large proportions it may create a dualist system which may be considered inferior to the traditional bachelor's degree.

There appears to be no progress on total transfer of vocational programs to community colleges. Boatman (1973) in the study in North Carolina indicated that guidelines should be established for this transfer in the health field. Reibling (1973) noted that even when one- and two-year programs existed in the same discipline and in the same community college there was little evidence of articulation.

COURSE ARTICULATION

Course articulation has received more attention than program articula-

tion. Kintzer (1976) indicates that where statewide pacts exist on course articulation, policies pertaining to acceptability of vocational-technical course credits are conspicuously absent. General education courses fare better; but when course descriptions differ, problems occur. Currently, courses are evaluated based on review of catalog descriptions. There needs to be a greater concern for content and usefulness of a course than the present concern with the exact title and scope (Menacher, 1974). Course articulation is probably a fruitful area of investigation, especially in the technical area. Course level in terms of depth and content is a major consideration in terms of course articulation. A current trend in course transfer is the development and use of equivalency tables, competency exams, and proficiency exams (Reibling, 1973). While some progress is being made, the diversity of educational programs complicates transfer of credit by course.

CORE CURRICULUM

Core curriculum addresses horizontal articulation and has an advantage over the aspects of economies of time and faculty. There is some support for this approach, especially in secondary education for it serves as a means of program design (Barton, 1974). The cluster approach in comprehensive high schools has some elements of core curriculum. On a post-secondary basis it has achieved limited success, but it complicates course articulation.

A study was conducted by the National Advisory Council on Vocational Education of secondary to post-secondary program articulation in vocational education in the same or closely related fields. The following conclusions were reported.

1. Nearly all states have programs identified for the study but less than 40 percent have planned articulation. When such articulation includes advance placement, it relies on competency-based exams and other criteria of the post-secondary institutions and not certificate of completion. Arrangements are determined by the post-secondary institution.
2. Articulation appears most frequently in content areas in apprenticeable and licensed occupations; and those that can be continued at college or university level.
3. Sixty percent of the responding states have institutional agreements for advanced standing in apprenticeship programs. Approximately 50 percent have some form of statewide coordinating group with representation from secondary and post-secondary institutions on the articulation issue. Sixty percent have local coordinating councils.
4. Limited interstate articulation exists between secondary and post-secondary programs. (National Advisory Council on Vocational Education, 1976)

It is interesting to note the positive benefit of external agencies in achieving articulation agreements. The Council of Medical Education is one

example of such an organization that can promote the possibility of career mobility at various levels (Ball, 1973). This agency is responsible for most program accreditations in the allied health field. The American Vocational Association, in a project for the National Commission on Accreditation, established six guidelines which were designed to aid in developing evaluation instruments. Guideline number five states: "Accreditation should facilitate the interchangeability of educational requirements, thus increasing freedom of movement up career ladders and between career ladders, eliminating the necessity to repeat courses in order to advance in an occupational field or to change fields" (Ash, 1974, p. 42).

Some of the factors that warrant the pursuit of articulation are 1) The need to avoid duplicating learning experiences and overlapping curricula because of cost to the student and society; 2) individual desire to obtain college credits and degrees; and currently, employers' upgrading of job requirements; and 3) the expectations for upward educational mobility for improvement in continuing employability (National Advisory Council on Vocational Education, 1976).

The National Advisory Council on Vocational Education's study (1976) revealed several methods of encouraging articulation: state encouragement, definition of institutional roles with philosophies of commitment, and cooperation among the parties involved were important. Menacher (1976, p. 203) observes, "In a very real sense, these personal human relationships and interactions (of faculty) provide the underpinning for all else that takes place for the purpose of improving academic transfer." The greatest local aids for achieving cooperation appear to be shared facilities and staff along with the development of competency exams. Conversely, the greatest problem preventing articulation is the attitudinal problem (Canup, 1976).

CONCLUSIONS

The problem of articulation is complex. There are two general approaches. The first is to work on articulation one level at a time beginning with secondary to post-secondary; and the second is to design a system and fit the delivery systems, with modification, into it. The first approach is more feasible given the size, diversity, and variety of governance patterns among our educational institutions. It is necessary that all involved participate and external resources be provided.

More specifically, the faculty of secondary and post-secondary institutions within the same occupational areas or discipline must be provided the opportunity and incentive to meet together to consider curricula. Some incentives could be reduction of faculty workload or monetary compensation. Such an endeavor should be encouraged by the institution's policy makers, patrons, and tax payers to *encourage* administrative support within

the participating agencies. Current funding practices do not encourage such working relationships.

However, some nonmonetary avenues do exist. In-service training time currently available could be used for this purpose. If vocational high school teachers could meet with their community college (technical institute, vocational school) counterparts as in-service training, the issues of articulation could be directly addressed by professionals in specific occupational areas. Without additional monetary support this approach restricts itself to a limited geographic area. Considering student mobility, limited for many at this level, this approach seems reasonable. If four-year institutions with interest in a given occupational area were available in the same geographic area, they should be included in this in-service. The thrust of the meeting should be occupational and educational advancement for the student through articulation. This would be the quickest, most direct method of achieving articulation with a modicum of institutional expense and a maximum of institutional and student benefit.

Evaluations conducted by institutions and accrediting agencies should address articulation. Many of our vocational educators are members of specific discipline professional groups as well as members of visiting accreditation teams. If they would address articulation, even as a suggestion, it would eventually become a reality. Currently, administrative entities consider favorably suggestions of external accrediting bodies.

Research in terms of competencies necessary at different levels of performance within a discipline should be encouraged. Such research should add subjective data to provide a smoother mechanism for articulation.

The state is the logical unit for articulation. It has within it the economic resources, incentive and curricular restraints to accomplish an articulated system. If states are to have efficient and effective educational systems, articulation must be pursued.

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Vocational Education for Our Ageless Society

By Ruth W. Volz*

INTRODUCTION

A segment of population which needs the attention and expertise of vocational educators throughout the nation is the segment composed of older Americans. Giving impetus to this need is the recent passage of national legislation—HR 53-83, known as the mandatory retirement bill.

The bill amends the Age Discrimination in Employment Act which protected workers ages 40 to 65 from mandatory retirement by raising the age to 70. It prohibits employers from forcing retirement below certain age levels but does not require retirement at any age; it does not affect the employer's right to discharge a person for incompetence regardless of age. The approval of HR 53-83 gives millions of older Americans the right to remain on the job, grants up to two years for mandatory retire-at-age-65 provisions to be phased out of existing labor union contracts and increases the available manpower supply.

Specifically, highlights of the new law are:

> After January 1, 1979, amendments approved by House and Senate conferees on the Age Discrimination in Employment Act of 1967 will prohibit mandatory retirement of employees of private business and state and local governments before age 70.
>
> Exempted will be business executives and others in high policy making positions who qualify for private pensions of $27,000 or more, and tenured professors. These groups may be required to retire at age 65. However, the exemption of college professors will lapse after July 1, 1982.
>
> After October 1, 1978, the federal government's present retirement age of 70 for most civilian employees will be abolished with the following exceptions: employees of the Foreign Service, the Panama Canal Zone, the Alaska Railroad, and the government police officers, firefighters, and air-traffic controllers (Knopf, 1978, p. 2).

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This legislation has profound implications for the vocational educator at the university level. Past legislative measures have necessitated that vocational educators eliminate discrimination regarding sexism, sex-role stereotyping, racism, and the handicapped. The mandatory retirement bill is declaring that agism—a form of discrimination as odious as racism or sexism—will not be tolerated.

It is imperative that vocational educators become knowledgeable of the issues and problems confronting older Americans. Programs and training must be geared toward meeting the unique needs of this age group. Solutions must be sought for problems existing in the world of work. The dilemma becomes more relevant when the social and economic consequences of disease control and age control technology are considered. The increased vigor of older Americans as well as life expectancy can increase the size of the work force with resulting pressures for shared work, part-time work and shorter work weeks. According to Theodore Gorden, president of the Future Groups, findings of a National Science Foundation-supported study indicate that if no major medical breakthrough occurs, by the year 2025, the number of Americans over 65 years of age will increase from 22 million today to 46 million or from 10 percent of the population to 14 percent.

AGE

Older Americans are people, and old age is but a developmental stage of their ongoing lives. A need exists to focus on the individual from birth to death in a coherent manner. A concept of career education focuses on education from birth to death; however, improvements are necessary in the implementation of the concept to enable the older American to remain a productive member of the work force. The ability to work is hampered by two factors: (1) the social security ceiling on earnings and (2) age discrimination (arbitrary retirement and bias against hiring). Technological obsolescence, possible physical limitations, and the need for additional formal education squeeze older people out of the work force (Butler, 1977).

At what age does one become an "older American?" The age of 65 used as a demarcation between middle and old age is arbitrary, borrowed from the social legislation of Chancellor Otto von Bismarck in Germany in 1880. The passage of HR 53-83 will influence the public to substitute age 70 for 65 for social purposes such as determining retirement or eligibility for service. The chronological age of either 65 or 70 has little relevance in describing an individual. Age is a convenient but inaccurate indicator of a person's physical and mental status and capability for performing work. American society pays little heed to experience or informal education of the older individual. Individuals are left with accrued bodies of knowledge gained through expe-

riences, locked within themselves, unsought and unavailable to others, and untapped. These are assets which could be utilized in the world of work.

HISTORICAL FACTORS

Measuring human worth in terms of individual productivity and power seems to be the national spirit of the country today. However, the present older Americans were influenced by such factors as Herbert Spencer's social Darwinism or "survival of the fittest" and the Protestant work ethic which philosophized success through hard work and self-sacrifice. Present-day older Americans were "young" during a time when huge fortunes were amassed by a few while poorly paid immigrant workers provided labor (Butler, 1977). Older people of today have witnessed the evolving of the labor movement and women's suffrage and child labor laws as protection against exploitation.

Older Americans realize they live in a nation which accepts the notion of survival of the strongest and attempts the protection of all, including the weak. They are contending with the concept of progress through industrialization and automation and human obsolescence which increases their sense of uselessness. Thus, they see themselves as burdens to society. The American dream of self-reliance and independence further isolates the older person from society. In an economy that, as a rule, discards old or nonfunctioning objects rather then repairing them, old and nonfunctioning people may be thought to be expendable as well (Knopf, 1975). However, the aged penetrate every segment of society; and each of us is bound to join their ranks and become an older American.

IMPORTANCE OF WORK

Sigmund Freud explained that no other aspect of living ties the individual so firmly to the realities of life as does work, and through work the individual becomes an integral part of society. The value of work is enhanced by the possibility it offers of expressing many of one's drives and instincts and maintaining emotional equilibrium while minimizing guilt feelings. Noninvolvement in the work force by older Americans leads to rapid physical deterioration and deprives society of services that these people are uniquely equipped to render. Work offers an individual socialization with others, status, recognition, and self-confidence. Individuals removed from the work force must find substitutions for these needs or they feel isolated, less important, less revered, and less self-confident. Older Americans who do not work find many of their support props disappearing and their self-esteem and independence lessening.

TECHNOLOGY AND EDUCATION

Several myths are associated with older Americans and work. Relative to specific performance levels, some changes do occur over a person's work life span; however, general performance rarely declines. Older workers who participate in experiments do less well on tasks involving speed and/or time pressures than younger workers, partially because of their unfamiliarity with procedures and a desire to perform well (Hendricks, 1977).

Older Americans with good physical and mental health may experience an increase in abilities such as judgment, accuracy, and general knowledge. For jobs demanding special accuracy and patience, older workers are superior to younger workers. Older people's attendance records are better and they have "know-how" for performing their jobs. Research data gathered by the Bureau of Labor Statistics have consistently refuted the belief that older workers are less accurate or less consistent than younger workers or that their rates of absenteeism are higher. Not only are older workers more likely to remain on the job, they are less likely to incur job-related injuries (Hendricks, 1977). Older workers' lack of technical skills is compensated for by personal dependability, loyalty, and consistency.

The idea of humanity and technology as partners, not as adversaries, is important. People must change at rates similar to their technology. After all, people invented technology. One need not inhibit or destroy technology or oppose scientific development. However, members of society can respond more rationally by controlling such development (Butler, 1977). Education must help individuals keep pace with changes and provide a human and life-centered focus.

IMPLICATIONS FOR VOCATIONAL EDUCATION

How can vocational education help the older American and society? Impetus to design course offerings for this segment of society must be implemented by the vocational education departments at universities, schools, and secondary schools throughout the nation. Considering the concepts of career education—life-long education—and the belief that to stop learning is to withdraw from life should hasten vocational education leaders and directors to gear enrollment campaigns toward the older American citizen.

Classroom instructors may act as the catalytic agent in bringing interaction between the younger and older generations of society by enlisting the older American as a teacher's aid in the classroom situation. The older American's expertise could be utilized toward the teaching of small engine operation and repair, carpentry, welding, electrical, and masonry work. The art of story telling and gardening could be shared by the older American with

preschoolers in the occupational child care programs. Students and older citizens both would experience satisfaction in meeting basic needs as they strive toward developing competencies in the various skills. Numerous ways exist in which the knowledge and experience of the older American can be shared and utilized in today's school environment. It is up to the vocational teacher to tap this resource. Regardless of whether the senior citizen is being taught or is helping to teach, all people involved in the educational aspects of the older American will continue to discover meaning in their own individual lives, to change, and to liberate themselves. It is an invitation to fresh adventure in self-development.

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The Meaning of Work: Past, Present, and Future with Implications for Education

By Betty Hester Smith*

INTRODUCTION

Kahlil Gibran (1969) has expressed the need for reconciliation between the self, work, and society:

> . . .And all work is empty save when there is love; And when you work with love, you bind yourself to yourself, and to one another. . .And if you cannot work with love but only with distaste, it is better that you should leave your work. . .(p. 26)

Indications are found in current publications that many workers are presently considering work to have a more distasteful than joyful influence in their lives.

The meaning of work to individuals in our society has been a primary concern of vocational educators for many years. Indeed, the problems involved in reconciling individuals to their work and their society pose tremendous challenges to all educators. However, these problems are too complex to be dealt with entirely by educational institutions; in addition, a cooperative strategy is required which combines efforts of individuals, industries, communities, governments, and societies. For those concerned with the present views of work in our society, a beginning point is derived by determining and analyzing the main issues that keep recurring as individuals share the meaning of work in their lives.

This article will deal with the meaning of work throughout history, the role of work in the lives of workers today, and the projected values of work in the future. After identifying some of the meanings, roles, and problems of work through the ages into the present and future, implications for education will be discussed. These implications should aid educators who have been forced to deal with constantly-changing work values in our society.

* Mrs. Smith is completing her doctoral dissertation at The University of Tennessee and is as a teacher of vocational office education, Public Schools, Alcoa, Tennessee.

HISTORICAL OVERVIEW

Historically, the importance of work can be traced to various philosophies of work which still influence the work and leisure of modern workers. In the pagan civilizations of Athens and Rome, work was regarded as befitting only slaves; it was not considered suitable activity for citizens or individuals of intellect. Although ancient Hebraic tradition assigned punitive values to work, additional positive values were attached to work as a means by which one might reclaim lost spiritual dignity. Martin Luther considered work in differentiated social strata as a moral obligation and a way to gain spiritual redemption. John Calvin considered hard work as a part of religious devotion, but he also supported freedom of choice in occupations (Borow, 1973).

During the Renaissance and Reformation periods, work began to evolve into the first concern of life. As individuals became creators through work, intrinsic meaning was attached to work. Craftsmanship developed gradually as an idealistic model of work gratification. However, work began to lose some of its meaning for individuals with the advent of industrialization. Individuals were no longer closely associated with the production of objects they used; industrialization imposed drudgeries in production-line jobs for men, women, and children.

The working class people in Colonial America were the first workers to break through the ancient class barriers toward social and economic equality. As America has gradually converted from primarily religious to more worldly values, the religious meanings and motives attached to work have declined in significance; work has become concerned mainly with the pursuit of material wealth (Best, 1973).

THE ROLE OF WORK TODAY

Even though the religious meaning of work has declined, the work ethic in America today consists of important personal or social motives for many individuals. Some of the personal and social needs being met through work include the following: improved socioeconomic status, greater self-esteem, clearer self-identity, preferred life style, more leisure time, and increased preference for congenial atmosphere and associates (Borow, 1973).

Many news commentators point out current happenings as symptoms that the work ethic is fading. These include worker apathy, increasing absenteeism, industrial sabotage, poor morale, and changing life styles. However, a task force formed by the Department of Health, Education, and Welfare (HEW) reported in 1971 that "work is central to the lives of most adults" (Wool, 1975, p. 156). The report further indicated that work not only provides economic rewards, but it also offers social and psychological

values. Results of another study (Porter, Lawler, 1975) also indicate that many people are identified with and committed to their work. When employees were asked whether they would continue working even if they had enough money so that it was unnecessary, 80 percent of a large sample said that they would continue working. In conflict with the HEW task force report, data from another study by Porter (1975) of a sample of employees in the United States concluded that "for almost three out of every four industrial workers studied, work and the workplace are not central life interests" (p.194).

The HEW report did note that large numbers of American workers at all occupational levels were dissatisfied with many aspects of their working lives. The process of work breakdown and specialization and the decreased opportunities for autonomy in work have been principal sources of disillusionment in workers today. These evolving trends in the workplace have been met by revolutionary changes in values and attitudes among many members of the work force, particularly women, minorities, and youth.

Many highly-educated work groups have greater expectations from work experiences and are placing more emphasis on the intrinsic aspects of work and less emphasis on strictly material rewards. Both the Maslow hierarchy of needs theory (1943, 1954) and the Herzberg theory of satisfaction and motivation (1966) infer that as the general wage level increases and physical working conditions improve, the concerns of workers shift from strictly economic issues to demands for improvement in the nature of work itself. One fallacy of these models may be indicated by the fact that even though individual earnings have increased steadily over the years, the majority of American workers do not consider themselves "affluent" on a current standard of living scale (Wool, 1975). Thus, when direct choices have to be made between a well-paying, secure, but monotonous job and a lower-paying, less secure, but more "satisfying" job, most workers do *not* choose the lower-paying job. Kaplan (1975) also notes that many people prefer job security, good wages and benefits, and decent working conditions over seeking opportunity for more creativity and responsibility in their jobs.

Work today does not consume as much of a person's lifetime as in the past. A longer time is being spent in school, and early retirement is being chosen by more people (although the latest laws may change this). Since employers are experimenting with flexible hours and four-day work weeks in an effort to improve worker satisfaction, workers are finding themselves with more and more leisure time. Workers are turning more toward leisure activities to supplement the search for meaning and fulfillment in life. This phenomenon is being seen more as fewer people and less time are needed to produce the basic necessities of life. A challenging question for the future may involve how to determine *who* will be responsible for performing the work tasks of the society.

PROJECTIONS OF WORK IN THE FUTURE

In the future, new forms of work activity will be found; the activities we now consider work are likely to disappear. An example from the past is agriculture, which involved 60 percent of workers 85 years ago and requires less than 5 percent of workers today. The agrarian economy has been replaced by a service economy (Best, 1973). The primary cause for the disappearance of past forms of work is technological advance which involves mechanization, automation, and cybernetics. Drucker predicts the growing importance of the "knowledge worker" in the future who will be concerned with creating, communicating, and applying the knowledge of society (Best, 1973).

Although advances in technology will tend to reduce human participation in work areas of today, the human necessity or desire to work will remain. Likely results will include expansion and consumption of goods and services, more pleasant working conditions, and more leisure time from work. The nature of work is already changing and is predicted to change more rapidly in the future. Some of these changes involve more mobility in workers, more occupational changes, higher levels of skill and knowledge, and increased unemployment for poorly educated.

As society moves toward full automation, work will become more "humanized" since machines will be doing much of the routine work, and individuals will be free to plan and control. Future work, then, will increasingly become a matter of how men and women define their existence; work will evolve from the priorities of human needs.

In the future, the duration of the organizational relationships of individuals will shrink. Organizations will change their internal shape frequently—jobs will change, responsibilities will be shifted, and departments will be created instantly only to be disbanded later. The temporary nature of work will be prevalent in the future super-industrial society. Rather than relying solely on management strategies of today, industries will rely on task forces made up of relative strangers with differing professional expertise to solve problems.

A very critical organizational shift predicted for the future is from primarily vertical to lateral power structure, indicating changes in human relations and management strategies. Work in the future will develop along more democratically organized structures. Democracy often becomes necessary whenever a social system is trying to survive conditions of chronic change. The values associated with this type of democracy involve free communication, consensus decisions, emotional expression, and mediation of conflict. Collaborative efforts by labor, management, government, and education will be required in obtaining participation by all segments in decision-making processes which allow workers more autonomy. Volvo of Sweden is an example of one company which has been very successful in its efforts to

implement new management ideas where workers are given more control over their work (Gyllenhammar, 1977).

In the United States, HEW has already funded a task force to define the causes of worker problems. It appears that in the future, the government may consider the next step: encouraging the development of specific processes and programs designed to meet the needs of workers on an experimental basis. It is difficult to project what the eventual involvement of government will be in finding new ways to humanize work in the United States (Herrick, 1975).

IMPLICATIONS FOR EDUCATION

After a cursory overview of the past, present, and future status of work in our lives, we will consider the implications for education which revolve around ever-changing work structures and values. Continuous job-related education will become necessary as work becomes an exploratory activity. Advanced education will progress in this manner: leisure interest to preparation for work to work itself. New ways must be found to better integrate work and education within the realities of today and the predictions of tomorrow. Changes must be made so that the relation between school and employment opportunities is less indirect. Vocational guidance must aid people in making occupational choices which reflect more of the realities of the working world and are not so connected to the impersonal aspects of the school and its curriculum.

Educational opportunities must be expanded and diversified if individuals are to be prepared for adaptability to change. Emphasis must be placed on learning the learning process as well as the content. Educational personnel must develop the ability to facilitate individual growth without forcing their own values and expectations on others.

In terms of facilities, more education will be based on community consensus and will exist in a "non-school system" which will center around learning which is not restricted to the classroom. Furthermore, most education is projected to take place in the housing complex of the future rather than in educational institutions, although it will be primarily directed by educational systems. Learners will go out of the complex only for some unique expertise or specialty not available on electronic equipment.

Some vocational educators have already expressed the need to structure community learning situations and to remove barriers to entry and exit of educational institutions in the future. This may involve blending secondary schools with colleges, vocational schools, and apprenticeship programs.

The thinking of educators must include the idea that all people may not be required to work in the future in order to survive. Some of the indications that this concept is already in action include these: more years spent on education, economic cycles disrupting work, and more credit spending of

income not yet earned. If, in fact, the necessity for work does diminish, then some other maturing or reality-focusing influence must be found to substitute for the working role. Unless some types of maturation process is substituted, there may be a decrease in societal interests and an increase in individual selfishness.

In the future, educators will have to spend time consulting with industry about how to make work more satisfying to workers. There is a growing need for more communication between employers and educators. Vocational educators and counselors need to develop more effective relationships so they can both work more closely with all teachers in integrating the vocational aspects into the total school curriculum.

Ideally, education will become the responsibility of all societal institutions. One of the problems today is that society expects the schools to do the entire job of preparing people for the world of work. This task should be the joint responsibility of family members, business and industry personnel, governmental officials, professional educators, and all citizens. In the future, a consensus may be drawn from the community on what formats and skills are best for preparation for work. Educators could obtain this consensus through promoting parental involvement, career education curriculum development, and business/industry consultation.

For many years, the goals of vocational education have been to aid individuals in finding rewarding work, in advancing economically and socially, and in increasing individual adequacy. By promoting optimum use of manpower resources, future vocational education will continue to contribute to the stability and growth of local, state, and national economies.

In preparing students for work in the future, vocational educators can begin with these relatively simple but important activities:

a. Help students examine personal work values.
b. Allow students to demonstrate work values in class.
c. Prepare students for the realities of the present work setting.
d. Help students examine future work trends and their projected impact.

Vocational teachers will also be in a position to provide a potent role model of the type of work ethic which will most likely assure students of success in the work world.

Although negative issues of dissatisfaction in the lives of workers must be recognized, it is even more important to relate the positive rewards to be derived from work. In addition to economic reward, additional values can be gained from work: being creative, applying skills, using initiative, bearing responsibility, and relating to others.

The collaborative efforts of all societal institutions will be required in preparing individuals for the role of work in the future. If more leaders in all segments of society would concentrate on identifying and emphasizing the

positive benefits of work, then perhaps more people could experience dignity, pride, increased self-esteem, and ultimate self-realization through their work.

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The Vocational Teacher Educator—An Endangered Species?

By Vickie Johnson Brown*

INTRODUCTION

Contemporary vocational teacher educators in some ways can be classified as an endangered species. According to Webster (1977), an endangered species is one which is ". . . exposed to danger or harm or is imperiled." Granted, today's vocational teacher educators are not endangered in the traditional sense—that of being exposed to harm that threatens their physical being; but, survival may be another issue. For example, in some instances the teacher education function is being assumed by state departments of education. Institutions of higher education must strengthen the quality of vocational teacher education programs or vocational teacher educators may well become an endangered species.

What is being done to improve the process of preparing vocational teacher educators? Because teachers tend to teach as they were taught, the influence of vocational teacher educators cannot be overestimated. Well-defined curricula for vocational teacher educator programs (VTEP) must be created for aspiring vocational teachers.

ADDRESSING THE IMPERATIVE

VTEP can be built best on a substantial research base. The absence of an adequate research base forces program designers to rely on intuitive guesses or hunches (Houston, 1969). Major questions to be asked when shaping VTEP are:

1. What is a vocational teacher educator?
2. What sepcific competencies does he/she need to possess?
3. What kinds of learning experiences best facilitate the acquisition and/or expansion of needed competencies?

The writer completed a comprehensive search of the literature and was

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unable to locate research which specifically addresses these three questions. The absence of such research leaves one to conclude that VTEP planners have relied on intuition to determine the competencies needed by prospective vocational teacher educators. VTEP planners have, in many instances, not adhered to the basics in planning timely, appropriate curricula.

Related Literature

Competencies needed in the role of vocational teacher educator need to be identified (Kazanas and Miller, 1974). In 1969 a group of nineteen vocational education leaders assembled at The Ohio State University to identify competencies needed by graduates of advanced vocational education degree programs. These programs were designed to prepare graduates to assume roles as either local administrators, state administrators, or teacher educators in vocational education (Arnold, 1970). The group was unable to reach a consensus on what specific competencies are needed due to a shortage of time for the assembly. The leaders did compile a list of nine competency clusters needed by advanced degree graduates of vocational education programs. The nine clusters are:

1. Curriculum and instruction
2. Evaluation
3. Fiscal responsibility
4. Legislative influence and authority
5. Program and facilities planning
6. Public relations and liaison
7. Research and development
8. Staff development and improvement
9. Student affairs

Using these nine clusters, Lynch (1973) identified and verified fifty-four competencies needed by graduates of comprehensive doctoral programs in vocational education. Lynch had a group of 148 respondents (vocational teacher educators) from eighteen universities give their perceptions of competencies needed by graduates who are to assume positions as either local administrators, state administrators, or vocational teacher educators. Lynch's research reports competencies needed by graduates of comprehensive vocational programs.

Research has been done to identify competencies needed by graduates of teacher educator programs in some service areas. However, distinct research on competencies needed by across-the-board vocational teacher educators is lacking and should be undertaken.

Preliminary Data

The writer conducted a survey to determine the qualifications essential in

assuming the role of vocational teacher educator. The directors of 1977-78 EPDA 552 projects at approved institutions were asked to supply any information and evaluation forms available for use in employing and promoting vocational teacher educators at their respective institutions. Of the forty directors, twelve replied. Six indicated that such information was not available. The other six responded that specific criteria must be met prior to a teacher educator's employment or advancement. The criteria utilized, however, are those used by all other disciplines in the colleges of education at those institutions. Criteria most frequently mentioned come as no surprise. They are the "big three"—teaching, research, and service.

Profile of the Vocational Teacher Educator

A profile of the contemporary vocational teacher educator is needed. Typically, the vocational teacher educator is a professional person responsible for the pre- and in-service training of teachers in a service area together with across-the-board vocational education needs. Aspiring vocational teacher educators *need* to know how many years of teaching experience on the secondary and/or post-secondary level(s) are needed to make the transitions from vocational teacher to service area teacher educator to across-the-board vocational teacher educator. Information is not available on the similarities and differences among these three roles.

Use of Occupational Analysis

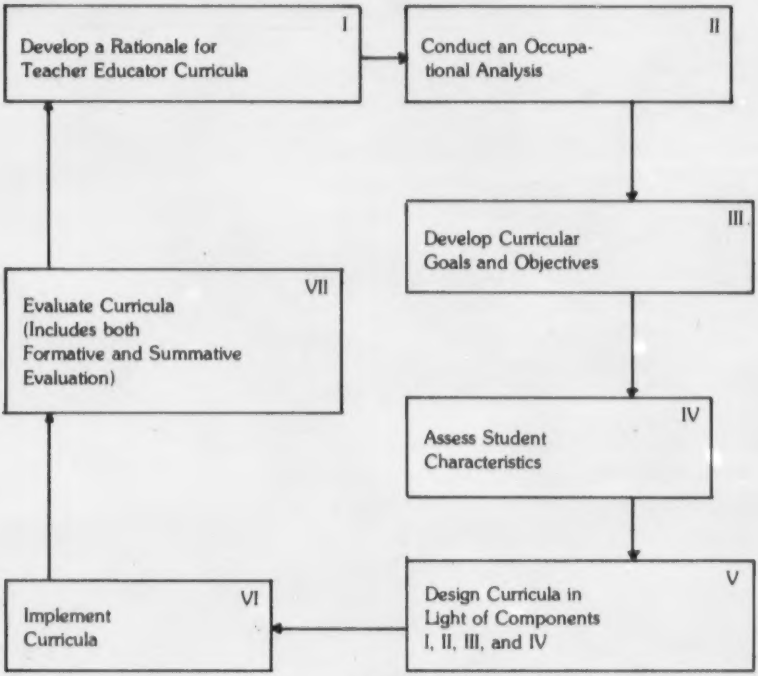
Occupational analysis is not new to vocational education. It has been strongly advocated for proper vocational curricular development but has been ignored when it comes to the development of VTEP. It is impossible to perceive the timely implementation of VTEP without conducting an occupational analysis to determine what a vocational teacher educator does within the profession. Across-the-board vocational education skills, knowledge, and attitudes of the teacher educator role should be assessed.

Learning Experiences To Facilitate Competency Acquisition

Once needed competencies are identified, learning experiences can be designed to promote the acquisition of such competencies. Progressive VTEP designed to prepare credible graduates are dependent on systematic planning. What is needed is a systematic curricular approach or model conducive to assessing past and present inadequacies and projecting future needs. Planners of VTEP would do well to consider and possibly adapt for use one of the many workable vocational curricular models used for other educational levels.

A model suitable for a VTEP is the curricular planning instrument developed by Battelle Columbus Laboratories (1972). Because of its systematic nature, it can accommodate the development, implementation, and

revision of teacher educator curricula in other disciplines as well. The major components of the model in graphic form are:



Educational planners initiating VTEP should follow the components in sequential order. Component VII would be the beginning of the model if an institution wished to revise or update a VTEP already in use.

Curricular Goals and Objectives

Based on prospective student needs and interests, societal needs, available resources, and occupational analysis, curricular goals and objectives would be developed. Objectives would be of three types—short-, intermediate-, and long-range. These goals and objectives should be conveyed to prospective teacher educators as they enter the doctoral program.

Assessment of Student Characteristics

It is assumed that aspiring teacher educators enter the doctoral program as master teachers. They need guidance, however, to make the transition to teacher of teachers. Characteristics of teacher educators in training should be assessed so that curricular development can be fashioned to accommodate individual differences.

Curricular Design

The design of a VTEP will represent a synthesis of components I, II, III, and IV. Because vocational teacher educators are expected to train teachers to cope with what Spillane (1976) refers to as "real parents" with "real children" in "real communities," theoretically-based VTEP alone will not suffice. Stone (1965) suggests that curriculum for teacher educators can only be comprehensive if professional content or theory *and* practical experiences are included. Therefore, VTEP should be structured so as to provide for both theoretical and practical learning that will enable students to address philosophic, psychological, sociological, and economic issues related to vocational teacher education. Formal provision should be made for VTEP students to acquire practical or "hands-on" experience via internships. Teacher education internship possibilities might include:

1. Student-teacher coordinator
2. Teaching assistant for a teaching methodology course
3. Teaching assistant for a course pertaining to the development of pedagogical skills
4. Planner and/or presenter of in-service sessions for teachers
5. "In-house" teacher with business or industry
6. Participant in summer workshops designed for the updating of teaching strategies
7. Research assistant
8. Administrative assistant to a local school system official
9. Assistant to an official in vocational education at the state and/or national education department levels

Practical teacher educator experience obtained through internships will be limited only by the individual VTEP student's creativity and initiative. Whenever the acquisition of practical experience is not possible, simulation should be encouraged.

Curricula Implementation

Curricula should be pilot tested once design work is complete. Pilot testing is encouraged so that the curricula's workability can be checked on a small scale prior to implementation on a larger scale. Also, pilot testing can help identify curricular problems.

Curricular Evaluation

VTEP evaluation should be both formative and summative. Evaluation criteria, reflecting curricular goals and objectives, must be tempered by three major factors; the primacy of the student, the role of the practitioner in the field, and the constancy of change.

CONCLUSION

Vocational teacher educators need not be an endangered species. Appropriate measures can and should be taken to assure their credibility and reliability in meeting vocational needs in America. Appropriate measures include developing a profile of the contemporary vocational teacher educator, identifying competencies essential to successfully filling the role, and developing systematic curricular programs that facilitate the acquisition of needed competencies. Such measures should be replicated periodically to insure that VTEP are responsive to the changing vocational demands within society. Neither the seriousness of the challenge nor the vast number of individuals who are counting on that challenge adequately being met affords vocational teacher educator curricular planners the luxury of procrastination.

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Human Relations versus Productivity— A Vocational Education Issue?

By Ruth D. Richardson*

INTRODUCTION

Nothing has more impact on career success than one's attitude, and most people greatly underestimate the importance of human relations in building their careers (Chapman, 1977). Most individuals take it for granted that they must possess certain job skills in order to obtain a job and to succeed in a job. Many believe that good human relations is nothing more than using simple common sense. But is it?

Should vocational teachers be concerned with helping students develop good job-related attitudes? Or, should they concentrate solely on helping students develop necessary job skills? Most vocational education students have two goals in mind. The first is to develop some specific skills or competencies. The second is to get and keep a rewarding job. Job skills are essential to obtaining a position. Human relations skills are essential for keeping and advancing on a job.

WHAT IS PRODUCTIVITY?

Simply stated, productivity is on-the-job performance. It is a management word. Individual productivity is a personal thing, the contribution a single person makes in certain work situations toward getting the departmental job accomplished. The work one person does is compared to that of others.

Group productivity is the total of all individual contributions within a department including that of the supervisor. Many times, group productivity is measured using figures and statistics. Management must be interested not only in the productivity of individuals but also in that of departments. Because of our free enterprise system, it is a matter of survival.

Group productivity is really more revealing than individual productivity.

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As a result, the interdependence among workers cannot be underestimated. One worker can have great influence on the productivity of others as manifested by raising or lowering departmental productivity. In other words, one employee could increase his or her personal productivity but decrease departmental productivity because of unfavorable human-relations skills. The key is for workers in a department to work together harmoniously to achieve a productivity level which is near their potential.

WHAT IS HUMAN RELATIONS?

Human relations is more than establishing and maintaining good relations with others. It is knowing how to handle difficult problems, working well under demanding and unfair superiors, building good working relationships in controversial situations, restoring a working relationship that has become unpleasant, learning to live with frustrations without hurting others and without damaging career potential, or being positive during an interview. The list is endless.

On the other hand, good human relations cannot be a substitute for work. It cannot cover up sloppy performance. Employees are valued for their productivity—the amount of acceptable work they turn out. But, the more productive employees usually have good human relations skills.

The old adage, "No man is an island," is a familiar one. Employees must be sensitive to the needs of their supervisors and their co-workers; they must work effectively with people. To ignore people with whom they work would mean career suicide. Chapman (1977) states that most experts agree that there is a definite relationship between human relations competence and productivity.

WHAT IS THE CURRENT SCENE?

How many times have vocational teachers been guilty of saying that they cannot "teach attitudes"? The United States has the highest youth unemployment rate in the world. Why? Is it the dropout rate? Is it because so many students graduate from high school without vocational skills? Is is that many young people are not motivated to work? Is it because young people do not realize the importance of personal qualities? Is it because students do not know how to evaluate themselves and their potential? Is it because young people do not know how to communicate effectively? It is all of these things.

In 1975, the Texas Advisory Council for Technical-Vocational Education completed a statewide survey in which employers gave the ten leading reasons for rejecting job applicants after the job interview. They are listed in rank order below:

1. Little interest or poor reasons for wanting a job

2. Past history of job hopping
3. Inability of applicant to communicate during job interview
4. Health record
5. Immaturity (other than chronological age)
6. Personal appearance
7. Manners and mannerisms
8. Personality
9. Lack of job-related skills
10. Poorly filled out job application form (Advisory Council for Technical-Vocational Education, 1975).

It is interesting to note that "lack of job-related skills" is in ninth place and that the remaining nine reasons relate to personal qualities. Needless to say, an examination of many vocational education programs is in order.

WHAT CAN BE DONE?

What can individual vocational educators do to help students in their classes develop desirable personal qualities along with job-related skills?

First, the vocational teacher must realize the importance of good human relations skills on a job. For example, far too many business education teachers have thought that if Susie or Johnny could take dictation at 80 words a minute for three minutes and transcribe at 95 percent accuracy and type 50 words a minute on a five-minute timed writing with no more than five errors, his or her success as a stenographer would be guaranteed! If only it were that simple. Studies show that most people lose jobs or are not promoted because of a lack of human relations skills, not lack of job skills.

Second, vocational teachers must help students in their classes to become aware of personal qualities that are important for the world of work. It is essential that teachers be able to structure their courses to include the right combination of job skills and human relations skills and to integrate the two effectively.

A project which was sponsored by the Illinois Department of Adult, Vocational and Technical Education identified twelve topics that could be developed into instructional modules to teach occupational survival skills. The topics include the following:

- Working for an organization
- Understanding self and others
- Motivation for work
- Interpersonal relations
- On-the-job communication
- Using creativity on the job
- Authority and responsibility

- Problem solving
- Coping with organization conflict
- Coping with organizational change
- Leadership
- Adapting and planning for the future (Nelson, 1977, p. 64).

The implementation of these skills into the vocational curriculum will depend on the creative ability of administrators, guidance counselors, and teachers, and their enthusiasm for innovation (Nelson, 1977).

Third, vocational teachers must help students understand and evaluate themselves. Starch suggests the following questions for the person still in school:

1. What is my level of ability? How do I compare with others my age?
2. What are my strong points and weak points? How can I overcome my weaknesses and improve myself?
3. What kind of person would I like to be? How do I see myself in the future?
4. How well do I get along with others? Do I deal with people effectively? Am I fair, honest, and truthful in working with others?
5. What kind of friends do I choose? What kind of person would I like for a wife or husband?
6. How can I become the kind of person I want to be? Is there anyone I would like to follow as a model?
7. What do I want to become? What kind of occupation do I want to follow? For what sort of work am I best suited? What would I really enjoy doing?
8. What preparation do I need for my occupation? How can I obtain it?
9. Am I determined and self-disciplined enough to do what I want to do and know I should do? Will I be able to work hard, to control my behavior and guide myself to reach my goals? (Starch, 1973, pp. 160-161).

Every vocational educator can readily see that students will need some guidance and counseling as they work through the self-inventory, particularly with respect to those questions related to certain occupations.

Fourth, vocational teachers must stimulate efforts toward change where student self-evaluation revealed deficiencies. There is normal resistance to change, but a skillful and understanding teacher can strive to motivate students to become what they are capable of becoming. Some methods which vocational educators might use in humanizing the classroom include the following:

- Observe and listen to students with care and concern
- Achieve openness in student-teacher relationships to permit improved response and interaction

- Help students toward the objective of personal relevance
- Recognize and accept different ways of responding, according to students' individualized styles and needs
- Stimulate creation and recreation of self-image that encourages further development
- Question, probe, and respond in ways that lead learners to assume responsibility
- Stand aside to let learners discover and exercise their own resources
- Make development of the students the major goal in teaching subject matter
- Achieve free response and see its relevance to intellectual development
- Achieve free and constructive communication with students
- Help students sense the living dynamics of the world's creations as revealed by history and current events
- Clear the way, by whatever means, for stretching students' minds and abilities in creative, self-fulfilling endeavors (Pine, 1975, p. 112).

Nothing succeeds like success! Vocational educators must strive constantly to help students be successful in their learning experiences. Experiencing success is a powerful motivator!

WHAT IS THE REAL ISSUE?

Clearly the issue is *not* whether vocational educators should emphasize only job-related skills on one hand or human relations skills on the other. Vocational education today must be a combination of the two.

An effective vocational teacher has command of the subject matter. He or she helps students attain an acceptable level of job skill so that students will be qualified for employment and will become productive employees.

An effective vocational teacher is also a human relations expert, who puts into practice his or her knowledge. He or she directs students in attaining the human relations skills necessary for succeeding and advancing in an occupation. The vocational teacher is skilled in determining the proper mix for combining instruction in subject matter and in human relations.

SUMMARY

Human relations and productivity are interdependent. Neither can stand alone. Vocational educators must come to the realization that in order for their students to succeed in the world of work, students must be highly trained in both job skills and human relations skills. There is a positive relationship between human relations competence and productivity!

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Benefit/Cost Analysis

By Virginia Leveille Hatch*

INTRODUCTION

Vocational-technical education is an investment that society makes in its students. As a result of investments in vocational education, quantifiable benefits can be derived. Quantifiable benefits are of two types, public and private. Students can expect to realize quantifiable *private* benefits in the form of gross earnings. Society can expect to realize quantifiable *public* benefits in the form of increased productivity.

The quantifiable public benefits to society, resulting from investments in vocational education, are the lifetime earnings of students. Students who develop marketable vocational skills are rewarded with higher earnings or a higher market price for vocational skills. Higher earnings are a measure of one's vocational skill contribution to society. Identifying quantifiable public benefits for educational programs, such as lifetime earnings of graduates, is a way to assess and compare the efficiency of vocational education programs.

Benefit/cost studies are useful in determining whether or not one should initiate new programs, or enlarge, reduce, or eliminate old programs. Benefit/cost analyses are related to the goals of programs and are essential to longer-range planning. Benefit/cost analyses are studies of ways to use resources most efficiently and effectively.

BENEFIT/COST RATIO

Benefits

The benefit factor in a benefit/cost analysis of vocational programs permits the decision maker to use earnings of the graduates as a measure of program evaluation. Advantages of using earnings are that this measure is objective, quantifiable, and identifiable. Earnings can be compared, for example, to national trends as in earnings potential in various vocational occupations.

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Costs

The cost factor in a benefit/cost analysis of vocational programs are those costs consumed by the program. Theoretically, all costs consumed by the vocational education program—direct and indirect—should be included.

Ratio

To determine the benefit/cost ratio, the total benefit figure is divided by the total cost figure. The result is the benefit/cost ratio.

If the benefit/cost ratio is one (benefits equal costs) or if the benefit/cost ratio is greater than one, on the basis of the benefit/cost ratio, aspects for the program are favorable. If the benefit/cost ratio is less than one (cost exceeds benefit), the program is not to be recommended based on the benefit/cost ratio. A benefit/cost ratio is one quantifiable, objective measurement of a vocational program.

COMPARING PROGRAMS

Alternative vocational programs could be compared on the basis of their respective benefit/cost ratios. For each program, benefit/cost ratios are prepared. The resultant ratios are compared by their relative numerical sizes. For example, if Program A yielded a benefit/cost ratio of 2.5 and Program B yielded a benefit/cost ratio of 5.0, Program B would yield twice as many benefits for the same amount of dollars invested in the program. It would be considered the more attractive of the alternative programs and would be recommended on the basis of its benefit/cost ratio. Perhaps other constraints or considerations, such as political or social factors, may affect a decision. When this occurs, benefit/cost ratios will provide a yardstick along with the nonquantifiable factors. However, the comparing of programs through a quantitative analysis of the benefit/cost type is essential for long-range planning of vocational-technical education programs.

The use of benefit/cost analysis ratios rests on certain assumptions, such as:

1. Benefits of vocational-technical programs are reflected by the earnings of program graduates
2. Earnings can be identified
3. The data about earnings (called stream of earnings) start with the first graduates of the program
4. Projected earnings of graduates usually parallel national earnings for workers in an occupation, and earnings trend data are projected to retirement
5. The risk of mortality is the same for alternative groups
6. The rate of unemployment will be the same for alternative groups
7. Foregone earnings will be the same for both groups
8. The major program costs can be identified and measured

The limitations of a benefit/cost study are those associated with any study and are limited to the degree of cooperation obtained from graduates. Cooperative graduates should provide adequate and accurate information regarding their earnings. The availability of cost data may also be a limitation.

BENEFIT/COST DATA DECISIONS

Benefits data should be gathered for annual gross earnings. Data may be collected from a survey of graduates, statistics available from the government, or wage rates for comparable jobs in industry. The wage rate option ignores the proportion of time employed and could affect the results of a study.

Cost data may be gathered for all possible costs applicable to a program or selected specific costs applicable to the program if one accepts the assumption that other costs are similar in alternative programs. Cost data may be gathered from primary source materials such as invoices, warrants, payroll registers. Secondary source materials may be used as cost estimates for equipment by vendors, and estimates of wage rates and salaries.

The analyst determines what collection of data is possible; however, the validity of the data influences the accuracy of the benefit/cost ratios. The more realistic and accurate the data, the more predictive are the judgments based on the benefit/cost ratio.

Lifetime Earnings

Lifetime earnings may be calculated on reported mean annual gross earnings or, if applicable, obtained from data reported by the U. S. Bureau of the Census. "Annual Mean Income, Lifetime Income, and Education Attainment for Men in the United States for Selected Years, 1956 to 1972" is one such government source.

Lifetime earnings should reflect the trend of earnings calculated with an escalation factor. The escalator factor is an adjustment for growth in economic productivity. Earnings can be expected to increase through the years at a compound annual rate percent which may be based on observed increases in earnings for workers in that occupation for a period of years prior to the date of graduation. Sources of data to project annual gross earnings of graduates are available. Examples include *Handbook of Labor Statistics* and the *Manpower Report of the President*.

Present Value

Customarily, a comparison of benefits and costs which occur at different points in time is facilitated by converting the dollars to present value dollars. Comparison of unequal actual values of earnings may be avoided by discounting earnings to the present value of the dollars by using the prevail-

ing discount rates. The idea is that a dollar that you earn today is worth the value of the dollar; however, a dollar that you will earn next year is worth less today because of the cost of time. (The compound interest factor and the discount factor are reciprocals.)

Discounting

There are a number of approaches to the selection of discount rates. One may choose the discount rates as follows: (1) government borrowing as evidenced by the prevailing rate for U.S. Treasury Bills (obtainable from banks or the *Wall Street Journal*), (2) private borrowing as evidenced by the rates of interest obtainable on certificates of deposit (obtainable from banks), or (3) blue chip bond rates such as bonds of American Telephone and Telegraph Company (obtainable from your stockbroker or newspaper).

When the discount rate is selected, divide each year's compounded earnings by the discount rate to obtain present value dollar earnings. Example: Year One would be $4,926 discounted by dividing by 7.5 percent (today's interest rate on U.S. Treasury Bills), or $4,926÷1.075=$4,582. This is the present value of the earnings for Year One. This computation is completed for each year's earnings. The discounted projected compounded earnings for all years are summed, and the total becomes the numerator in the present value benefit/cost ratio.

Personnel

Costs used should include all expenses for instruction, such as *salaries for teachers*, social security payments (that portion paid by the school system), *retirement* (school system's portion), and *hospitalization* or other benefits (school system's portion). Gross earnings figures can be obtained from payroll journals or registers located in the school system's business office. Other information should be obtained from audited statements available from the school system. Example: $15,000 (social security) + $505 other basic benefits.

Equipment

Costs for items which are unaffected by a benefit/cost decision regarding the vocational-technical program should be ignored. Only direct costs of equipment actually consumed by the program should be included. Individual items must be listed and costs data collected for each.

Cost estimates for equipment can be obtained from the manufacturer's representatives when planning new programs or actual paid costs of equipment when assessing ongoing programs. The state's share of the purchase price must also be considered. Since costs in education are generally paid in full during the year purchased, there is no need to deal with a present value problem.

To ascertain the cost of the equipment to be assigned to a particular year of use, the *Internal Revenue Service Guidelines for Depreciation of Asset Accounts* (obtainable from your local IRS office) should be consulted. The straight-line method of depreciation should be used to determine the yearly cost of the unit. For example, a typewriter has a useful life of six years; thus, the cost of this equipment for one year would be the original cost of the typewriter divided by six years. Example: $600÷6 years=$100. This method simply divides the original cost by the number of expected years of useful life.

Equipment costs for each year of the program, prorated by program-time-consumption and per student are calculated. The per student cost is assigned to individual students in their groups by year of graduation. These costs are summed by years. The total per student program cost by year of graduation becomes the denominator in the benefit/cost equation.

Maintenance

Maintenance costs can be obtained from invoices supported by maintenance work orders. If an estimate for a proposed program is needed, the representative of the manufacturer of the equipment can advise on predicted repair costs.

If a class is not the sole user of the equipment, the costs of the equipment must be prorated among the classes on the basis of percent of time used. A program that uses equipment for three hours each day of a possible five-hour per day schedule uses three-fifths or 60 percent of available equipment-use time. The maintenance cost figure is multiplied by the percent of time used to obtain the program price. Example: $300 x .60=$180.

The program cost for maintenance is divided by the total number of students in the class and the result is assigned to the individual students in their groupings by year of graduation. Example: $180 ÷ 20 students = $9 per student. The per student maintenance of equipment cost is added to the other costs by year of graduation to be summed and to become the denominator of the benefit/cost equation.

PRORATION OF BENEFITS/COSTS

Techniques for prorating expenditures may be based on the item for which expenditure is prorated. The methods of proration may be *time consumption* (proportion of time spent in the activity), *hour consumption* (utility hourly rate), *number of pupils in program* (enrollment), quantity consumed (actual consumption of supplies or other commodities), *mileage consumption, average daily membership,* and *time-floor area* (gross floor-area hours) consumption.

For example, if teachers do not spend 100 percent of their time in

teaching in a program, salary figures must be prorated by determining how many hours each day were spent on that program in relation to the full class load which their gross earnings represent. A teacher who taught five hours each day, three hours of which were spent in teaching office occupations, spends three-fifths of each day teaching office occupations classes. Thus, three-fifths or 60 percent of the salary is assignable to office occupations cost. Example: $15,505 salary x .60 percent of time = $9,303 actual prorated cost.

After determining the instructional cost for the program, it is necessary to divide that cost by the number of students in the group. This will yield the per student prorated program cost. Example: $9,303÷20 students = $465.15 per student. Such data based on equivalent elements permits logical comparisons to be made.

PRESENT VALUE BENEFITS/PRESENT VALUE COSTS

PV (B)/PV (C)

The benefits of a project and the costs for the project are used in the present value equations given below to determine the benefit/cost ratio in present value terms for the project. If alternatives are being considered, the same process should be followed for each alternative.

The benefit/cost ratio, as modified, equals the present value of benefits divided by the present value of costs when the present value of benefits formula is:

$$PV\,(B) = \frac{B1}{1+i} + \frac{B2}{(1+i)^2} + \ldots + \frac{Bt}{(1+i)^t} + \ldots + \frac{BT}{(1+i)^T}$$

and the present value of costs formula is:

$$PV\,(C) = \frac{C1}{1+i} + \frac{C2}{(1+i)^2} + \ldots + \frac{Ct}{(1+i)^t} + \ldots + \frac{CT}{(1+i)^T}$$

Where i = the discount rate as a decimal fraction, t = the particular year, T = expected life of the combined benefit stream and cost stream, Bt = benefits in year t, and C_t = costs in year t (Hardin, 1967).

Based on the benefits calculated according to the directions given heretofore, one can establish that the stream of earnings for this group has been escalated and discounted to present value. The lifetime earnings of this group will be $109,664. (See Table 1). This number becomes the numerator for our benefit/cost equation.

Table 1
BENEFITS

Present Value Lifetime Earnings
derived from
Mean Average Gross Earnings
Compounded Annually at 4.1 Per Cent
Discounted at 7.5 Per Cent

Year	Base Earnings	Escalation Factor	Projected Earnings	Discount Rate	Present Value Earnings
1	$4,732	1.041	$ 4,926	1.075	$ 4,582
2		1.084	5,129	1.156	4,437
3		1.128	5,338	1.242	4,298
4		1.174	5,555	1.335	4,161
5		1.223	5,787	1.436	4,030
6		1.273	6,024	1.543	3,904
7		1.325	6,270	1.659	3,779
8		1.379	6,525	1.783	3,660
9		1.436	6,795	1.917	3,545
10		1.495	7,074	2.061	3,432
11		1.556	7,363	2.216	3,323
12		1.620	7,666	2.382	3,218
13		1.686	7,978	2.560	3,116
14		1.755	8,305	2.752	3,018
15		1.827	8.645	2.959	2,922
16		1.902	9,000	3.181	2,829
17		1.980	9,369	3.419	2,740
18		2.061	9,753	3.676	2,653
19		2.146	10,155	3.951	2,560
20		2.234	10,571	4.248	2,489
21		2.325	11,002	4.566	2,410
22		2.421	11,456	4.909	2,334
23		2.520	11,925	5.277	2,260
24		2.623	12,412	5.673	2,188
25		2.731	12,923	6.098	2,119
26		2.843	13,453	6.556	2,052
27		2.959	14,002	7.047	1,987
28		3.080	14,575	7.576	1,924
29		3.207	15,176	8.144	1,863
30		3.338	15,795	8.755	1,804
31		3.475	16,444	9.412	1,747
32		3.618	17,120	10.117	1,692
33		3.766	17,821	10.876	1,639
34		3.920	18,549	11.692	1,587
35		4.081	19,311	12.569	1,536
36		4.248	20,102	13.512	1,488
37		4.423	20,930	14.525	1,441
38		4.604	21,786	15.614	1,395
39		4.793	22,680	16.785	1,351
40		4.989	23,608	18.044	1,308
41		5.194	24,578	19.398	1,267
42		5.407	22,586	20.852	1,227
43		5.628	26,632	22.416	1,188
44		5.859	27,725	24.098	1,151
TOTAL					$109,664

The costs calculated by following the directions given herein yields the per student expenditures for the program. (See Table 2). Total costs for the first and second years of the program are $1,635 per pupil. This becomes the denominator for the benefit/cost equation.

Thus,

$$\frac{PV\ (B)}{PV\ (C)} = \frac{\$109{,}664}{\$\quad 1{,}635} = 67.07$$

Table 2
COSTS

Time-Consumption Proration
Per Student Expenditure

Year	Item	Cost	Time Used	Annual Program Cost	Number of Students	Per Student Cost
19xx	Instruction	15,505	.60	9,303	20	$ 465
	Equipment	9,960	.60	5,976	20	299
	Maintenance	1,500	.60	900	20	45
	Total					$ 809
19xx	Instruction	16,000	.60	9,600	20	$ 480
	Equipment	9,960	.60	5,976	20	299
	Maintenance	1,550	.60	930	20	47
	Total					$ 826
	TOTAL					$1,635

Analysis

The present value of benefits divided by the present value of costs yields the benefit/cost ratio of 67.07. Inasmuch as this ratio exceeds unity (1), this option has a favorable benefit/cost ratio and may be recommended on the basis of the benefit/cost analysis. If an alternative program has also been studied, that benefit/cost ratio should be compared with this ratio for relative size. The program with the larger ratio should be recommended on the basis of benefit/cost analysis.

CONCLUSIONS

There are three approaches to education planning: political, social, and economic. Specifically, these are (1) manpower forecasting, (2) social de-

mand, and (3) investment criterion. All of these approaches have been used in decision making in educational planning.

The first option, manpower forecasting, is workable only in a regulated society where vocational training and subsequent employment are assigned by the state to the individual with the interest of the state foremost; and, subsequently, the individual is narrowly trained or educated. If his/her job becomes obsolete, the state will have to rescue this person. The social demand model is responsive to the verbal or influential element in society that desires free education to satisfy its wants; for example, instruction in public schools for stringed instruments but not for piano. The investment criterion approach to decision making requires that marketable skills be such that workers will have maximum bargaining power in a competitive labor market; thus, earnings become an important variable.

There are three possibilities for the investment criterion to compare projects: (1) compare the differences between benefits and costs, (2) compare the rates of return on investment, and (3) compare the ratios of benefits to costs. The first is rejected because it favors large projects over small ones. The second is put aside because it would have to be specific for age or years from graduation for the age pattern or years-from-graduation pattern of an average differential lifetime earnings stream. The third allows projects to be ranked according to the dollars returned on each investment in relation to the cost of the investment.

The author believes that the benefit/cost ratio should be a part of each decision-making package because it is an objective, quantifiable, and easily understood measure. It is useful during the planning period of programs for purposes of justification and, later, for the evaluation of those projects. It discourages autocratic and emotional decisions unsupported by facts, and can reveal the cost of policy decisions.

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